TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY

No. 43-0001-28-3

Washington, DC, 29 September 1986

DATA SHEETS FOR
GUNS, HOWITZERS, AND MORTARS
INTEROPERABLE AMMUNITION

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

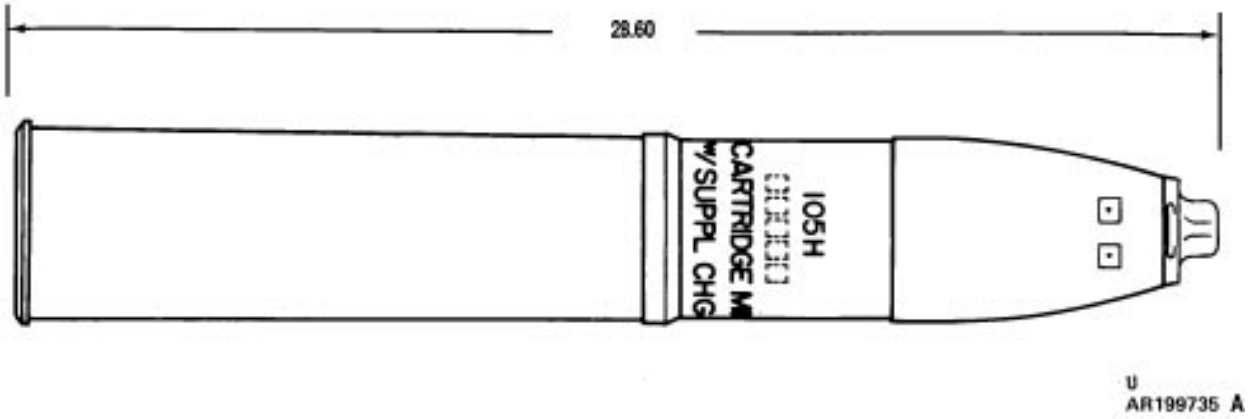
You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to Commander, US Army TACOM, Armament Research, Development and Engineering Center, ATTN: AMSTA-AR-LSB, Picatinny Arsenal, New Jersey 07801-5001. A reply will be furnished directly to you.

CHAPTER 3 - TABLE OF CONTENTS

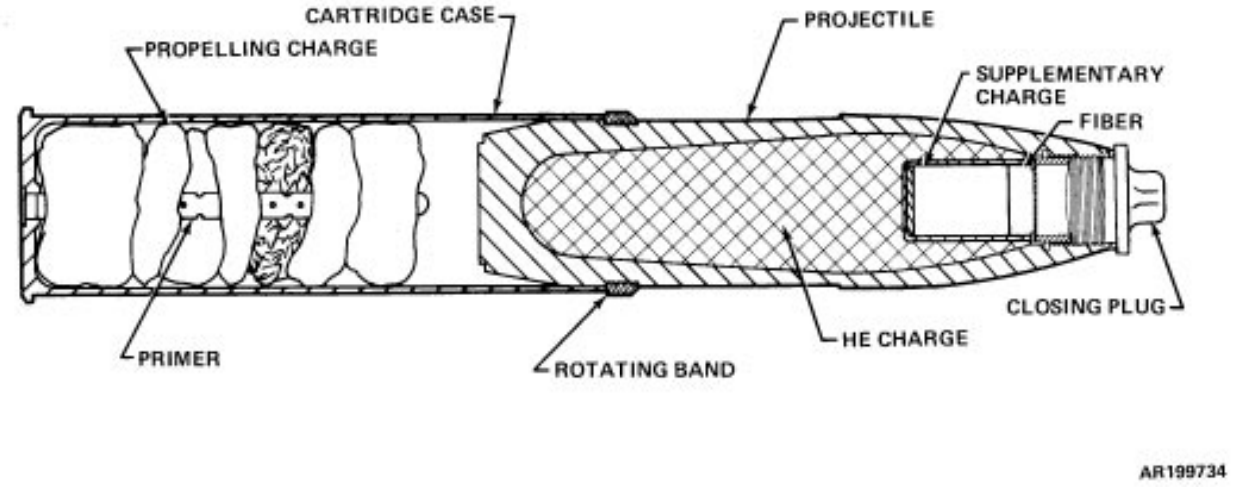
Page

CHAPTER 3
AMMUNITION FOR HOWITZERS

CARTRIDGE, 105 MILLIMETER: HE, M1 (GR, SP)



:



Type Classification

Std AMCTC 4181 dtd 1966

Use:

The projectile of this cartridge contains high explosive and is used for fragmentation, blast, and mining in support of ground troops and armored columns.

Description:

The projectile consists of a hollow steel forging with a boattail base, a streamlined ogive, and gilding metal rotating band. A base cover is welded to the base of the projectile for added protection against the entrance of hot gases from the propelling charge during firing. the high explosive (HE) filler within the projectile may be either cast TNT or Composition B. A fuze cavity is either drilled or formed in the filler at the nose end of the projectile. This cavity may be either shallow or deep. A cavity liner, to preclude dusting of HE during transportation and handling, is seated in the cavity and expanded into the lower projectile. This cavity may be either cast TNT or Compo-

sition B. A fuze cavity is either drilled or formed in the filler at the nose end of the projectile. This cavity may be either shallow or deep. A cavity liner, to preclude dusting HE during transportation and handling, is seated in the cavity and expanded into the lower projectile fuze threads. A supplementary charge is placed in the fuze cavity of projectiles having deep cavities. Projectiles with shallow cavities or deep cavities containing a supplementary charge use only short intrusion fuzes, PD, or MT. Those with deep cavities will accept the long intrusion proximity fuze after removing the supplementary charge. Projectiles may be shipped with a PD or MTSQ fuze or with a closing plug. When shipped with a closing plug, a chip board spacer is assembled between the supplementary charge and plug to limit movement of the former during transportation and handling.

The cartridge case contains a percussion primer assembly and seven individually bagged and numbered propelling charge increments. The base of the cartridge case is drilled and the primer assembly is pressed into the base. The percussion primer assembly consists of a percussion ignition element and a perforated flash tube containing black powder. The seven numbered increment bags are tied together, in numerical order, with acrylic cord. These are assembled into the cartridge case, around the primer flash tube, with Increment 1 at the base of the cartridge case and Increment 7 toward the mouth of the cartridge case.

Functioning:

If the projectile is unfuzed, the closing plug is removed and a fuze assembled to the projectile prior to adjusting the charge and loading the cartridge into the weapon. Impact of the weapon firing pin results in the initiation of the percussion primer which, in turn, ignites the black powder in the flash tube. The flash tube provides for uniform ignition of the propelling charge producing a rapid expansion of the propellant gas which propels the projectile out of the weapon tube. Engagement of the projectile rotating band with the rifling of the weapon tube imparts spin to the projectile providing inflight stability. Projectile function is dependent upon the fuze used and may function on impact (instantaneous or delay), function above ground either at a predetermined height based upon time of flight or function in proximity with the target area. Fuze function detonates the HE projectile filler resulting in projectile fragmentation and blast.

Tabulated Data

Complete Round:

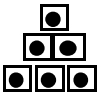
Type	HE
Weight	39.92 lb
Length	W/closing plug 28.60 in. max
Cannon (weapon) used with	with M49 (M52, M52A1), M2A1, M2A2 (M101, M101A1), M103 (M108), M137 (M102)

Projectile:

Body material	Forged steel
Color	Olive drab w/yellow marking

Filler weight:
Comp B:
Normal cavity .....5.08 lb
Deep cavity .....4.60 lb
TNT:
Normal cavity .....4.80 lb
Deep cavity .....4.25 lb

Weight Zone:

Loaded Shell w/Suppl Charge (with out fuze	Up to Over & Incl lb	Zones	Marking
Pounds	29.90 30.60	1	
	30.50 31.20	2	
	31.10 31.80	3	

NOTE: Comp B filled projectiles fall in weight zone 2-1/2.

Cartridge Case

Model	Matl	Wt (lb)(approx)
M14	Brass	5.9
M14B1	Steel, Drawn	5.4
M14B3	Steel, 5 pc spiral wrap	4.7
M14B4	Steel, 3 pc spiral wrap	4.7

Propelling charge:
Model.....M67

Components:

Increment No.	Prop Comp &Type	Web Size in. approx	Wt oz Approx
1	M1, Type II	.014	8.6 Single Perf
2	M1, Type II	.014	1.4 Single Perf
3	M1, Type I	.026	2.5 Multi Perf
4	M1, Type I	.026	3.8 Multi Perf
5	M1, Type I	.026	5.8 Multi Perf
6	M1, Type I	.026	8.8 Multi Perf
7	M1, Type I	.026	14.3 Multi Perf

Weight, total increments 1-7 .....2.83 lb

Percussion primer assembly:

	M28A2	M28B2
Primer	M61	M61
Black powder	CI 1, Spec MIL-P-223 (Note B)	CI, Spec MIL-P-223 (Note B)
Weight (lb)		
(primer)	.00014	.00014
(BP)	.43	.043
Body	Brass, Type 1	Steel, Type 2

Fuzes.....PD, M557, M78 Series, M739 Series, MTSQ, M582 Series, M564, Prox. M513 Series, M728, M732

Performance:

Using M52, M52A1 and M101/M101A1 howitzers.

Charge	Muzzle Velocity (fps)	(mps)	Maximum Range (mtr)	(yd)
1	650	198.1	3510	3840
2	710	216.4	4110	4495
3	780	237.7	4860	5315
4	875	266.7	5950	6505
5	1020	310.9	7650	8370
6	1235	376.4	9380	10,260
7	1550	472.4	11,270	12,330

Maximum range.....11,270 mtr (12,330 yd)
Muzzle velocity .....472.4 mps (1550 fps)

Using M102 and M108 howitzers.

Charge	Muzzle Velocity (fps)	(mps)	Maximum Range (mtr)	(yd)
1	673	205	3700	4040
2	732	223	4300	4700
3	810	247	5200	5690
4	912	278	6300	6890
5	1066	325	8100	8500
6	1289	393	9600	10,500
7	1621	494	11,500	12,590

Maximum range.....11,500 mtr (12,590 rd)
Muzzle velocity .....494 mps (1621 fps)

Temperature Limits:

Firing:

Lower limit .....-40°F (-40°C)
Upper limit.....+125°F (+52.0°C)
Storage:
Lower limit .....-80°F (-62.2°C) (for periods not exceeding three days)
Upper limit.....+160°F (+71.1°C) (for periods not exceeding 4 hr/day)

*Packing1.....1 round in fiber container; 2 containers in wooden box
*Packing Box:
Weight w/cartridge.....120 lb
Dimensions .....37-1/4 x 11-15/16 x 7-19/32 in.
Cube.....2.0 cu ft

*NOTE: See SC for complete packing data including NSN's.

Shipping and Storage Data:

Quantity-distance class .....(12) 1.2
Storage compatibility group.....E
DOT shipping class.....A
DOT designation.....AMMUNITION FOR CANNON WITH EXPLOSIVE PROJECTILES
DODAC 1315-C445
Drawing number .....9211611 (shipped without fuze)
Limitations:

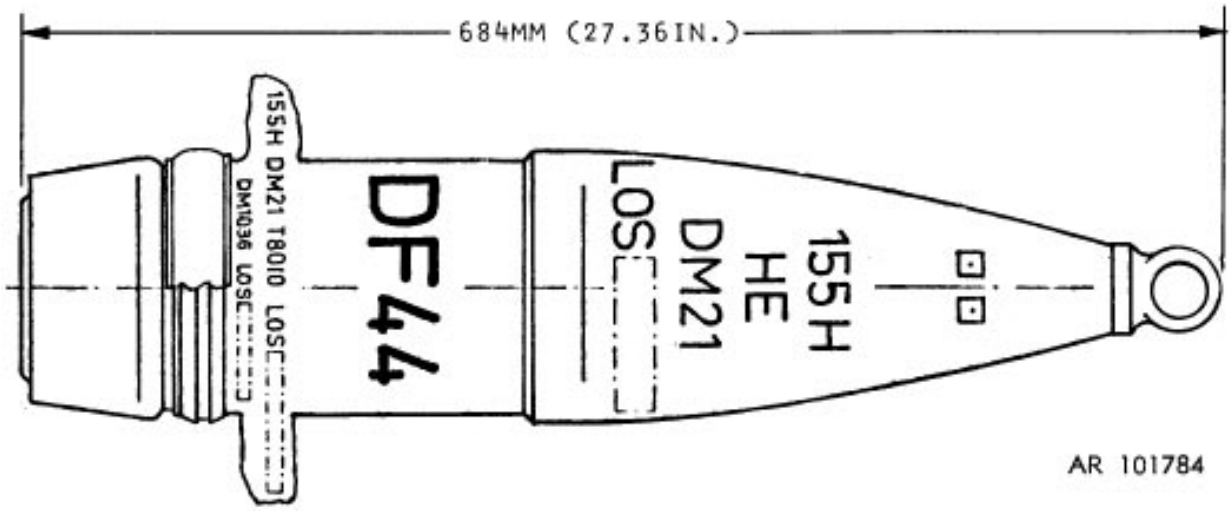
For proximity mode, VT M513 proximity fuzes are limited to Zones 2 through 6. Zone 7 in combat emergency only. For impact action, Zones 4 through 6 only.

VT Fuze M728, for proximity or impact action, Zones 1 through 6. Zone 7 for proximity action only in a combat emergency.

Reference:

DARCOM-P 700-3-3
SB 700-20
SC 1305/30-IL
TM 9-1015-203-12
TM 9-1300-251-20
TM 9-2350-217-10

PROJECTILE, 155 MILLIMETER: HE DM21 (GE)



Use:

This projectile is fired from 155mm howitzers and is used for blast effect, fragmentation, and mining.

Description:

The projectile is a hollow steel shell filled with TNT. The shape is ogival with a boattail for aerodynamic efficiency. A supplementary charge of 0.135 kg (0.3 lb) TNT is sealed in an aluminum container placed in the fuze cavity of the projectile. A threaded lifting plug closes the fuze cavity at the nose of the projectile for handling. A point detonating fuze is used with this projectile. A rotating band encircles the shell casing near the base and is protected by a grommet before loading. A steel plate (base cover) is welded over the base to prevent entry of hot propellant gases into the projectile interior.

Functioning:

When the weapon is fired, the burning propellant charge generates rapidly expanding gases to propel the projectile through the barrel with the velocity required to reach the target. The soft alloy rotating band engages the barrel rifling to impart spin to the projectile for stability in flight. Upon impact, the fuze and its booster detonates the high explosive filler.

Tabulated Data

Weight Zone Information:

Zone	Loaded Projectile w/o Fuze kg Over	Loaded Projectile w/o Fuze (lb) Up to & Incl	Marking Yellow Squares
2	40.8(89.7)	41.4(91.0)	
3	41.3(90.8)	41.9(92.1)	
4	41.7(91.7)	42.5(93.5)	
5	42.3(93.0)	42.9(94.3)	

Complete Round:
- Type .....HE
- Length w/lifting plug .....684 mm (27.36 in.) max
- Length w/o lifting plug .....607 mm (24.28 in.)
- Weapon M109, M109A1, M109A3
- Cannon.....M126 and M185

Projectile:
- Body material .....Forged steel
- Color .....Olive drab w/yellow markings

Filler and weight:
- TNT .....6.6 kg (14.5 lb)

Primers:
- For (Weapon):
  - M109, M109A1, M109A3.....M82 (US only)
  - M109G.....DM191A1 (GE only)

Propelling charges.....DM62, DM42B1

Fuze DM211

Temperature Limits:

Firing:
- Upper limit.....+125°F (+52°C)

Storage:
- Upper limit.....+145°F (+63°C)

Packing.....8 projectiles on pallet

Pallet:
- Weight.....362 kg (796.4 lb)
- Dimensions .....685 x 340 x 815 mm (27.4 x 13.6 x 32.6 in.)
- Cube.....0.190 m^3 (6.6 ft^3)

Shipping and Storage Data:

Storage class/SCG.....(18) 1.1D
DOT shipping class.....A
DOT designation.....EXPLOSIVE PROJECTILES
DODAC DF44
Assembly drawing number .....Not available

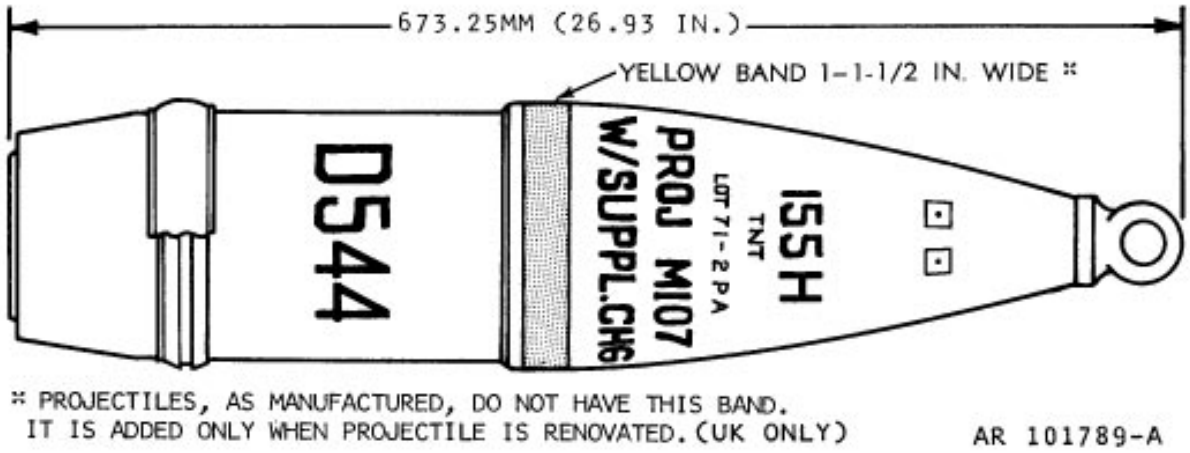
Limitations:

Not available

Reference:

Not available

PROJECTILE, 155 MILLIMETER: HE, M107 (NORMAL AND DEEP CAVITY)
(UK, CA, NL, DA, NO, IT, GR, BE, FR)



Use:

This projectile is fired from 155mm howitzers and is used for blast effect, fragmentation, and mining.

Description:

The projectile is a hollow steel shell filled with 6.57 kg (14.6 lb) of TNT. The shape is ogival with a boattail for aerodynamic efficiency. A supplementary charge of 0.135 kg (0.3 lb) TNT is sealed in an aluminum container placed in the projectile with deep fuze cavity. A threaded lifting plug closes the fuze cavity at the nose of the projectile for handling. Point detonating fuzes are used with this projectile. A rotating band encircles the shell casing near the base and is protected by a grommet before loading. A steel plate (base cover) is welded over the base to prevent entry of hot propellant gases into the projectile interior.

NOTE

With the exception of a yellow hazard band around the body of renovated projectiles, these UK munitions are identical to US munitions.

Functioning:

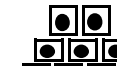
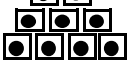
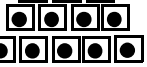
When the weapon is fired, the burning propellant charge generates rapidly expanding gases to propel the projectile through the barrel with the velocity required to reach the target. The soft alloy rotating band engages the barrel rifling to impart spin to the projectile for stability in flight. Upon impact, the fuze and its booster detonates the high explosive filler.

Difference Between Models:

155mm HE Projectile M107 (Normal Cavity) has a shallower fuze cavity and cannot accomodate proximity fuzes.

Tabulated Data

Weight Zone Information:

Zone	Loaded Projectile w/o Fuze kg Over	Loaded Projectile w/o Fuze (lb) Up to & Incl	Marking Yellow Squares
2	40.5(90.1)	41.0(91.3)	
3	40.9(91.1)	41.5(92.4)	
4	41.4(92.0)	42.1(93.7)	
5	41.9(93.3)	42.5(94.6)	

Complete Round:
- Type .....HE
- Length w/lifting plug .....673.25 mm (26.93 in.) max
- Length w/o lifting plug .....597.25 mm (23.89 in.)
- Weapon M109, M109A1, M109A3
- Cannon.....M126 and M185

Projectile:
- Body material .....Forged steel
- Color .....Olive drab w/yellow markings

Filler and weight:
- TNT .....6.57 kg (14.6 lb)

Primer for weapons M109, M109A1, and M109A3.....M82

Fuzes, point detonating.....M557 and L85A2

Temperature Limits:

Firing:
- Lower limit .....-40°F (-40°C)
- Upper limit.....+125°F (+52°C)

Storage:
- Lower limit .....-80°F (-62°C) (for periods not more than 3 days)
- Upper limit.....+160°F (+71°C) (for periods not more than 4 hr/day)

Packing.....8 projectiles on pallet

Pallet:
- Weight.....358.6 kg (797 lb)
- Dimensions .....678 x 340 x 800 mm (27-1/8 x 13-5/8 x 32 in.)
- Cube.....0.20 m^3 (6.8 ft^3)

Shipping and Storage Data:

Storage class/SCG.....(18) 1.1D
DOT shipping class.....A
DOT designation.....EXPLOSIVE PROJECTILES
DODAC:
  Deep cavity.....1320-D544
  Normal cavity.....1320-D571
Assembly drawing number:
  Deep cavity.....9216352
  Normal cavity.....Not available

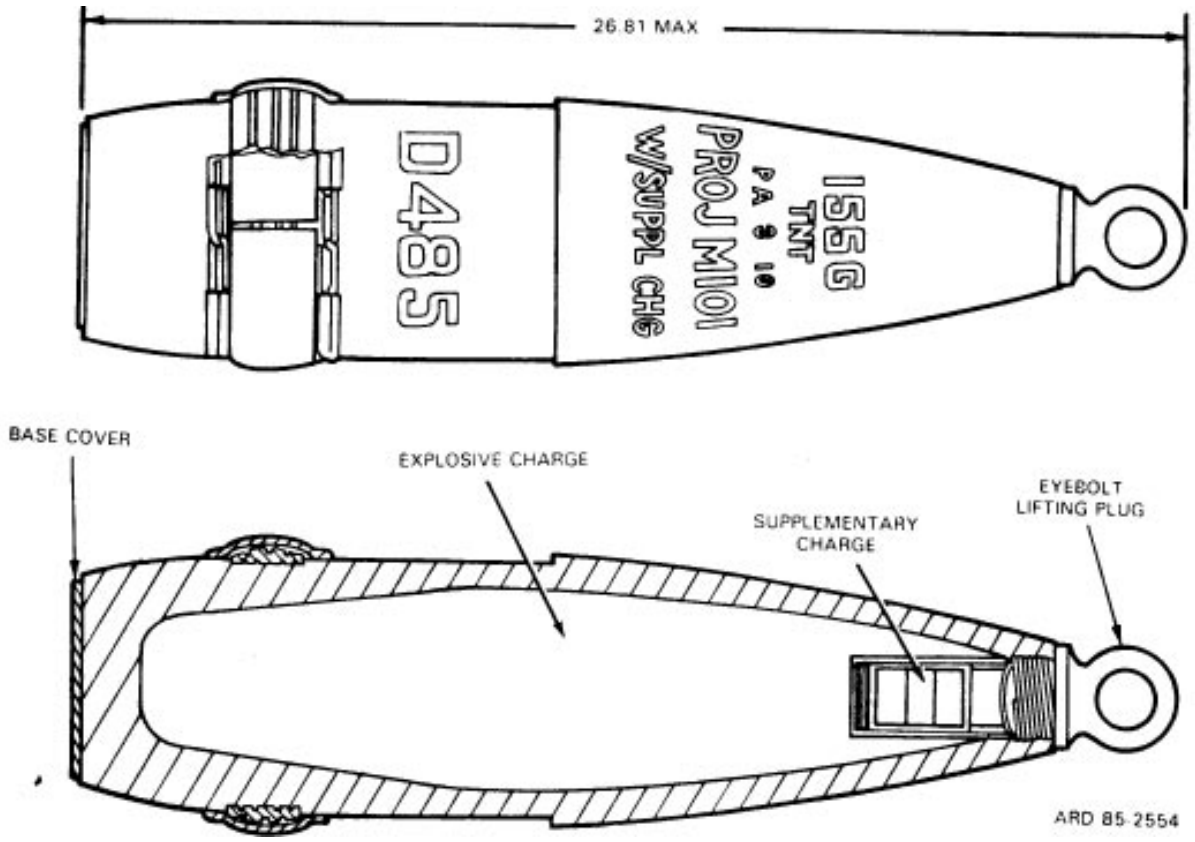
Limitations:

Not available

Reference:

DARCOM-P 700-3-3
SB 700-20
SC 1305/30-IL
TM 9-1025-200-12
TM 9-1300-251-20
TM 9-2350-217-10
TM 9-2350-217-10N

PROJECTILE, 155 MILLIMETER: HE, M107B2 (GR, NL)41.9(92.1)



Use:

This high explosive projectile is used for fragmentation, mining, and blast.

Description:

This projectile was originally the M101 designed for use with the M46 gun. It has now been modified for use with all 155mm howitzers and is designated M107B2. The rotating band has been modified for howitzer acceptance. The projectile consists basically of a forged steel body containing an explosive charge of 14.16 pounds of TNT. A deep fuze cavity in the nose of the projectile contains a supplementary charge of 0.30 pound of TNT in an aluminum liner. The design of the fuze cavity and the presence of the supplementary charge adapt the projectile for use with either proximity, mechanical time or point-detonating fuzes. A single rotating band (protected by a grommet during storage and handling) encircles the projectile approximately 3.5 inches forward of the boattailed base. The base itself is fitted with a protective cover which gives added assurance that the propellant gases will not penetrate the base. The projectile is issued unfuzed with an eyebolt lifting plug threaded in the nose.

Functioning:

Up to the point of fuze functioning, all 155mm ammunition functions in the same manner. When the weapon is fired, gases generated by the burning propellant force the spin-stabilized pro-

jectile out of the gun tube and propel it to the target. The fuze functions at a preset time, on approach to the target, or on impact, depending upon the type of fuze employed.

Precautions In Firing:

Before loading the weapon, check the firing lock to assure that the primer expended in the previous firing has been removed.

Tabulated Data

Complete Round:
- Type ..... HE
- Length w/lifting plug ..... 26.81 in.
- Weight ..... 95.6 lb
- Cannon used M1, M1A1, M1A2, M45, M126, M185

Projectile:
- Body material ..... Forged steel
- Color ..... Olive drab w/yellow markings

Filler and Weight:
- TNT ..... 14.16 lb

Primers ..... Mk2A4 or M82
Propelling charges M3, M4A1
Fuze ..... PD M557

Temperature Limits:

Firing:
- Lower limit ..... -40°F (-40°C)
- Upper limit ..... +125°F (+52°C)

Storage:
- Lower limit ..... -80°F (-62°C) (for periods of not more than 3 days)
- Upper limit ..... +160°F (+71.1°C) (for periods of not more than 4 hours per day)

Packing ..... 8 projectiles on pallet

Pallet:
- Weight ..... 797 lb
- Dimensions ..... 27-1/8 x 13-5/8 x 32 in.
- Cube ..... 6.8 cu ft

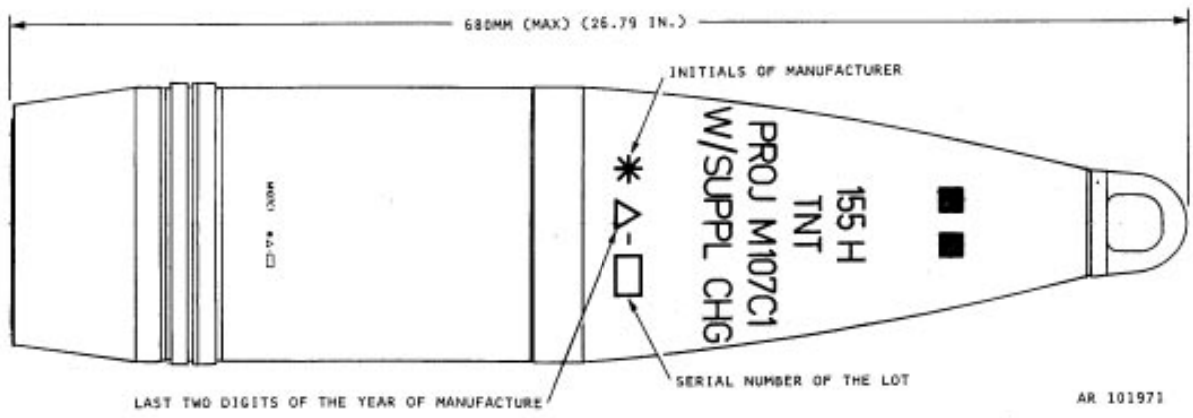
Shipping and Storage Data:

Quantity-distance class ..... (18) 1.1
Storage compatibility group ..... D
DOT shipping class ..... A
DOT designation ..... EXPLOSIVE PROJECTILE

Reference:

DARCOM-P 700-3-3
TM 9-1300-203

PROJECTILE, 155 MILLIMETER: HE, M107C1 (NL)



Use:

This projectile is fired from 155mm howitzers and is used for blast effect, fragmentation, and mining.

Description:

The projectile is a hollow steel shell filled with 14.6 lb of TNT. The shape is ogival with a boattail for aerodynamic efficiency. A threaded lifting plug closes the fuze cavity at the nose of the projectile for handling and storage. Point detonating, time or proximity (deep cavity only) fuzes may be used with this projectile. A rotating band encircles the shell casing near the base and is protected by a grommet before loading. A steel plate (base cover) is welded over the base to prevent entry of hot propellant gases into the projectile interior.

Functioning:

When the weapon is fired, the burning propellant charge generates rapidly expanding gases to propel the projectile through the barrel with the velocity required to reach the target. The soft alloy rotating band engages the barrel rifling to impart spin to the projectile for stability in flight. If a point detonating fuze or time fuze is employed the fuze detonates the supplementary charge on impact (PD) or at the preset time (MT), and the supplementary charge detonates the projectile filler.

Tabulated Data

Weight Zone Information:

Zone	Loaded Projectile w/o Fuze Over	Loaded Projectile w/o Fuze Up to & Incl	Marking Yellow Squares
2	40.823(90.0)	41.413(91.3)	
3	41.322(91.1)	41.912(92.4)	
4	41.731(92.0)	42.502(93.7)	
5	42.320(93.3)	42.910(94.6)	

Complete Round:
- Type .....HE
- Length w/lifting plug .....680 mm (26.79 in.)
- Length w/o lifting plug .....604.5 mm (23.81 in.) (max)
- Cannon used with M126, M126A1, M185

Projectile:
- Body material .....Forged steel
- Color .....Olive drab w/yellow markings

Filler and Weight:
- TNT .....6.57 kg (14.6 lb)

Primers for Weapons
- M109, M109A1, M109A2, M109A3 .....M82

Propelling charges.....M4A1, M3C1*, M4C3*
Fuze .....PD, M557C1*
*NL manufacture

Temperature Limits:

Firing:
- Lower limit .....-65°F (-52°C)
- Upper limit.....+145°F (+62°C)

Storage:
- Lower limit .....-62°C (-80°F) (for periods of not more than 3 days)
- Upper limit.....+160°F (+71°C) (for periods of not more than 4 hr/day)

Packing.....8 projectiles on pallet
- Pallet:
- Weight.....360 kg (793.8 lb)
- Dimensions .....840 x 705 x 353 mm (33.0 x 27.7 x 13.9 in.)
- Cube.....0.209 m^3 (7.3 ft^3)

Shipping and Storage Data:

Storage class/SCG.....(18) 1.1D
DOT shipping class.....A

DOT designation.....EXPLOSIVE PROJECTILES
DODAC .....Not available
Assembly drawing number .....Not available

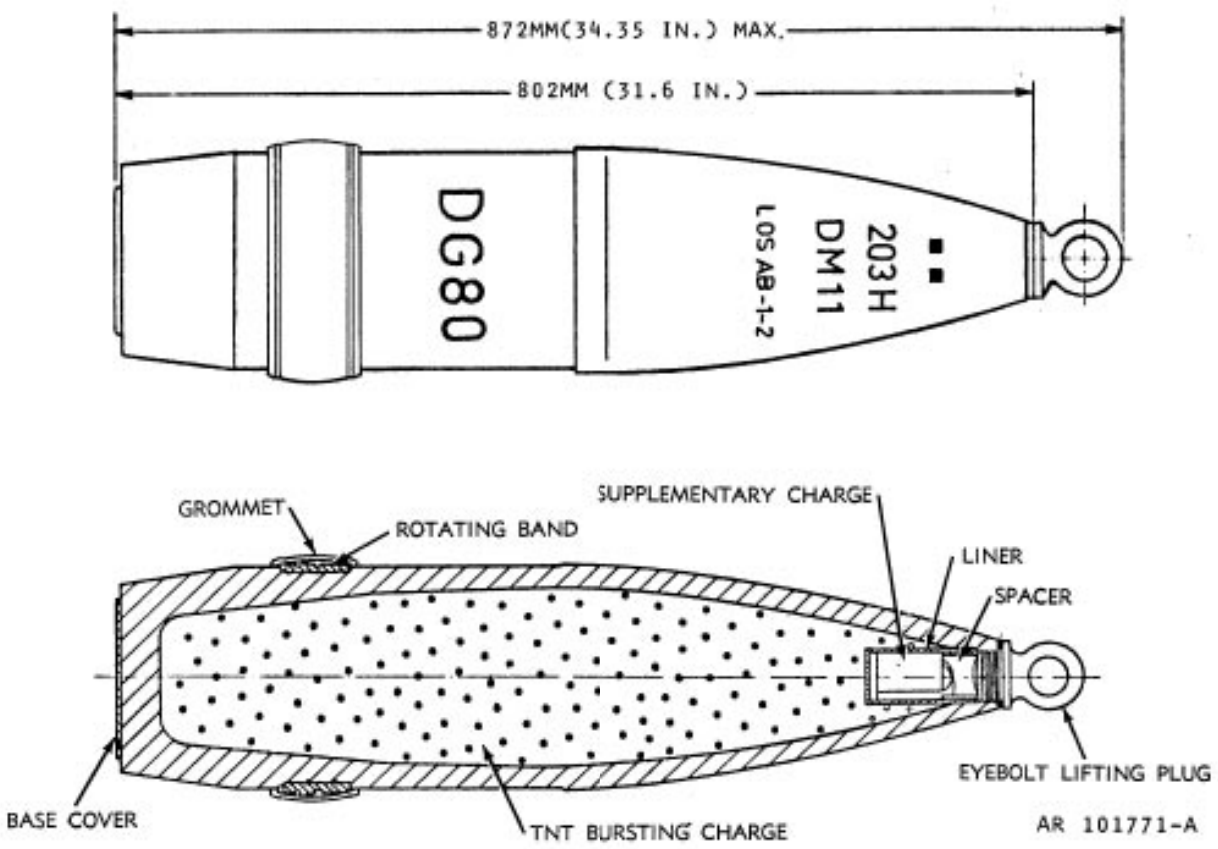
Limitations:

Not available.

Reference:

Not available.

PROJECTILE, 203 MILLIMETER (8-INCH): DM11 (GE)



Use:

This projectile is used against personnel and materiel, producing blast and fragmentation at the target.

Description:

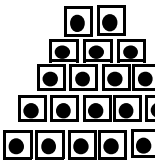
The projectile consists of a hollow steel forging with a boattailed base, a streamlined ogive, and a gilding metal rotating band. A base cover is welded to the base of the projectile for added protection against the entrance of hot gases from the propelling charge during firing. The nose of the projectile is fitted with a threaded eyebolt lifting plug to facilitate handling and provide a closure for the fuze cavity. The projectile is made with either a shallow or deep fuze cavity and is loaded with TNT. Deep cavity projectiles contain a supplementary charge and the lifting plug to limit movement of the supplementary charge during shipping and handling. The rotating band is protected by a removable grommet. The loaded projectile is zoned into one of five weight zones ranging from 86.8 to 92.7 kilograms (191.4 to 204.3 pounds). The weight zone of the projectile is indicated by a number of squares and prick punch marks on the ogive of the projectile.

Functioning:

The grommet and lifting plug are removed from the projectile and the projectile is fitted with the authorized fuze and rammed into the weapon chamber. Fuze arming occurs after firing, during projectile flight downrange. The fuze functions detonating the projectile on impact, either superquick (SQ) or with 0.05 second delay.

Tabulated Data

Weight Zone Information:

Zone	Loaded Projectile w/o Fuze Over	Loaded Projectile w/o Fuze Up to & Incl	Marking Yellow Squares
2	86.8(191.4)	88.1(194.3)	
3	87.9(193.9)	89.3(196.9)	
4	89.1(196.4)	90.4(199.3)	
5	90.2(198.9)	91.6(201.9)	
6	91.4(201.4)	92.7(204.3)	

Complete Round:

- Length:
  - W/o lifting plug .....802 mm (31.6 in.)
  - W/lifting plug .....872 mm (34.35 in. max)
- Diameter:
  - Rotating band.....210 mm (828 in. max)
  - Bourrelet .....203 mm (7.998 in. max)
- Body material .....Steel
- Color .....Olive drab w/yellow markings
- Filler and weight.....TNT 16.5 kg (36 lb)
- Supplementary charge .....TNT 0.14 kg (0.3 lb)
- Grommet.....3 types - metal w/wire ties, fiberglass or plastic w/metal lever
- Weapon M110, M110A1, M110A2
- Cannon.....M2A2 (M2A1E1) M201, M201A1

Propelling charges.....DM12, DM22
Primer*.....M82
Fuze .....Point detonating DM241

*The US M82 Primer is not interchangeable with the GE M19A1 Primer because of variations in the breech mechanism. GE weapons must use DM191A1 Primers and US weapons must use M82 Primers.

Temperature Limits:

Firing:

- Upper limit.....+125°F (+52°C)

Storage:
  Upper limit.....+145°F (+63°C)
Packing.....6 projectiles on pallet
Pallet:
  Weight.....635 kg (1400 lb)
  Dimensions .....720 x 480 x 972 mm (28.4 x 18.9 x 38.3 in.)
  Cube.....0.336 m^3 (11.8 ft^3)

Shipping and Storage Data:

Storage class/SCG.....1.1D
DOT shipping class.....A
DOT designation.....EXPLOSIVE PROJECTILE
Drawing number .....Not available
DODAC DG80
Firing Tables (US):
  FT 8-0-5 .....M110, Cannon M2A2 (M2A1E1)
  FT 8-Q-1 .....M110A1, Cannon M201, M110A2, Cannon M201A1

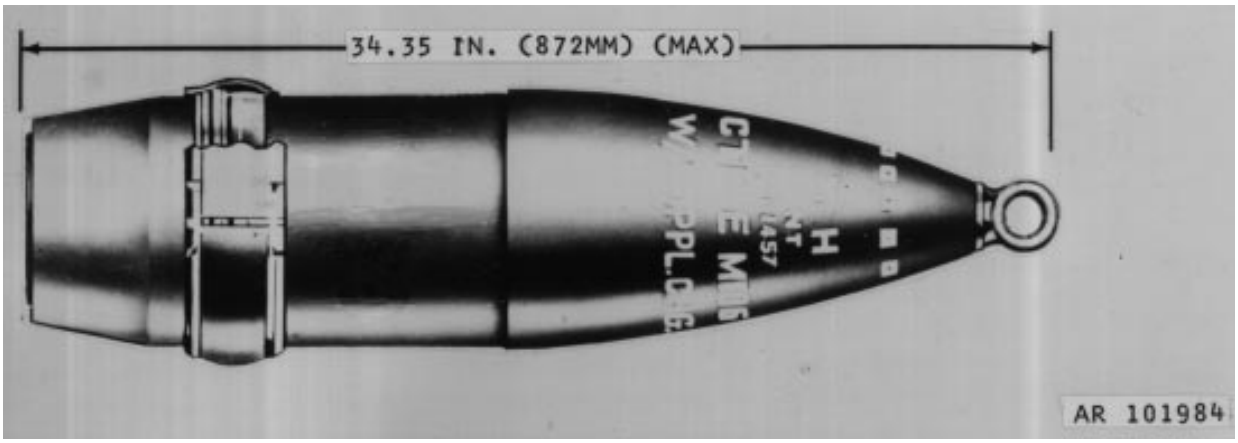
Limitations:

Not available.

Reference:

Not available.

PROJECTILE, 203 MILLIMETER (8-INCH): HE, M106
(NL*, GE, SP, BE*, DA, IT**, GR, UK*)



Type Classification:

*US manufacture
**Some US manufacture

Use:

This projectile is used against personnel and materiel, producing blast and fragmentation at the target.

Description:

The projectile consists of a hollow steel forging with a boattailed base, a streamlined ogive, and a gilding metal rotating band. A base cover is welded to the base of the projectile for added protection against the entrance of hot gases from the propelling charge during firing. The nose of the projectile is fitted with a threaded eyebolt lifting plug to facilitate handling and provide a closure for the fuze cavity. The projectile is made with either a shallow or deep fuze cavity and may be loaded with TNT or Composition B. Deep cavity projectiles contain a supplementary charge in the fuze cavity. A cardboard spacer is placed in the fuze cavity between the supplementary charge and the lifting plug to limit movement of the supplementary charge during shipping and handling. The rotating band is protected by a removable grommet. The loaded projectile is zoned into one of five weight zones ranging from 86.8 to 92.6 kg (191.4 to 204.3 lb). The weight zone of the projectile is indicated by the number of squares and punch prick marks on the ogive of the projectile.

Functioning:

The grommet and lifting plug are removed from the projectile and the projectile is fitted with one of the authorized fuzes and rammed into the weapon chamber. Fuze arming occurs after firing, during projectile flight downrange. Depending upon the type of fuze fitted, the fuze functions, detonating the projectile on impact with a point detonating (PD) fuze or after an elapsed time with a mechanical time and superquick (MTSQ) fuze.

Tabulated Data

Weight Zone Information:

Zone	Loaded Projectile w/o Fuze kg Over	(lb) Up to & Incl	Marking Yellow Squares
2	86.8(191.4)	88.1(194.3)	
3	87.9(193.9)	89.2(196.8)	
4	89.0(196.4)	90.4(199.3)	
5	90.2(198.9)	91.5(201.8)	
6	91.3(201.4)	92.6(204.3)	

Complete Round:

- Type .....HE
- Length:
  - W/o lifting plug .....798 mm (31.43 in.)
  - W/lifting plug .....872 mm (34.35 in. max)
- Diameter:
  - Rotating band.....210 mm (828 in.)
  - Bourrelet .....203 mm (7.998 in. max)
- Body material .....Steel
- Color .....Olive drab w/yellow markings
- Filler and weight.....TNT 16.5 kg (36.3 lb) Comp B 17.6 kg (38.3 lb)
- Supplementary charge .....TNT 0.136 kg (0.3 lb)
- Grommet.....3 types - metal w/wire ties, fiberglass or plastic w/metal lever
- Weapon M110, M110A1, M110A2
- Cannon.....M2A2, M201, M201A1

Temperature Limits:

Firing:

- Lower limit .....-40°F (-40°C)
- Upper limit.....+125°F (+52°C)

Storage:

- Lower limit .....-80°F (-62°C) (for periods of not more than 3 days)
- Upper limit.....+160°F (+70°C) (for periods of not more than 4 hr/day)

Packing.....6 projectiles on pallet

Pallet:

- Weight.....568.8 kg (1253 lb)
- Dimensions .....1003 x 724 x 489 mm (39-1/2 x 28-1/2 x 19-1/4 in.)
- Cube.....0.36 m^3 (12.4 ft^3)

Shipping and Storage Data:

Storage class/SCG.....1.1D
DOT shipping class.....A
DOT designation.....EXPLOSIVE PROJECTILE
DODAC .....Not available
Drawing number .....Not available

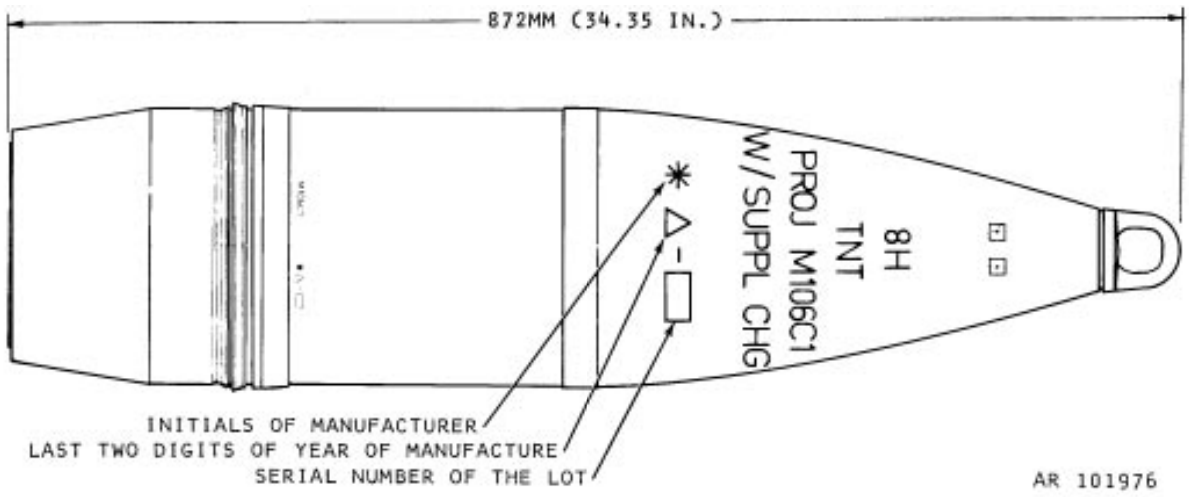
Limitations:

Not available.

Reference:

TM 9-1300-206
TM 9-1300-251-20
TM 9-1300-251-34

PROJECTILE, 203 MILLIMETER (8-INCH): HE, M106C1 (NL)



Use:

This projectile is used against personnel and materiel, producing blast and fragmentation at the target.

Description:

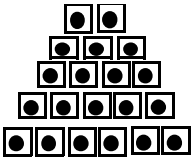
The projectile consists of a hollow steel forging with a boattailed base, a streamlined ogive, and a gilding metal rotating band. A base cover is welded to the base of the projectile for added protection against the entrance of hot gases from the propelling charge during firing. The nose of the projectile is fitted with a threaded eyebolt lifting plug to facilitate handling and provide a closure for the fuze cavity. The projectile is made with either a shallow or deep fuze cavity and may be loaded with TNT or Composition B. Deep cavity projectiles contain a supplementary charge in the fuze cavity. A cardboard spacer is placed in the fuze cavity between the supplementary charge and the lifting plug to limit movement of the supplementary charge during shipping and handling. The rotating band is protected by a removable grommet. The loaded projectile is zoned into one of five weight zones ranging from 86.8 to 92.6 kg (191.4 to 204.3 lb). The weight zone of the projectile is indicated by the number of squares and punch prick marks on the ogive of the projectile.

Functioning:

The grommet and lifting plug are removed from the projectile and the projectile is fitted with one of the authorized fuzes and rammed into the weapon chamber. Fuze arming occurs after firing, during projectile flight downrange. Depending upon the type of fuze fitted, the fuze functions, detonating the projectile on impact with a point detonating (PD) fuze or after an elapsed time with a mechanical time and superquick (MTSQ) fuze.

Tabulated Data

Weight Zone Information:

Zone	Loaded Projectile w/o Fuze kg Over	(lb) Up to & Incl	Marking Yellow Squares
2	86.8(191.4)	88.1(194.3)	
3	87.9(193.9)	89.2(196.8)	
4	89.0(196.4)	90.4(199.3)	
5	90.2(198.9)	91.5(201.8)	
6	91.3(201.4)	92.6(204.3)	

Complete Round:

- Type .....HE
- Length:
  - W/o lifting plug .....798 mm (31.43 in.)
  - W/lifting plug .....872 mm (34.35 in. max)
- Diameter:
  - Rotating band.....210 mm (8.28 in.)
  - Bourrelet .....203 mm (7.998 in. max)
- Body material .....Steel
- Color .....Olive drab w/yellow markings
- Filler and weight.....TNT, 16.5 kg (36.3 lb)
- Supplementary charge .....TNT 0.136 kg (0.3 lb)
- Grommet.....3 types - metal w/wire ties, fiberglass or plastic w/metal lever
- Weapon M110, M110A1, M110A2
- Cannon.....M2A2, M201, M201A1

Temperature Limits:

Firing:

- Lower limit .....-40^{o}F (-40^{o}C)
- Upper limit.....+125^{o}F (+52^{o}C)

Storage:

- Lower limit .....-90^{o}F (-62^{o}C) (for periods of not more than 3 days)
- Upper limit.....+160^{o}F (+70^{o}C) (for periods of not more than 4 hr/day)

Packing.....6 projectiles on pallet

Pallet:

- Weight.....565 kg (1246 lb)
- Dimensions .....1020 x 720 x 497 mm (40.2 x 28.3 x 19.6 in.)
- Cube.....0.365 m^3 (12.7 ft^3)

Shipping and Storage Data:

Storage class/SCG.....1.1D
DOT shipping class.....A
DOT designation.....EXPLOSIVE PROJECTILES
DODAC .....Not available
Drawing number .....Not available

Limitations:

Not available

Reference:

TM 9-1300-206
TM 9-1300-251-20
TM 9-1300-251-34